Development of early life stages of the blenny *Hypleurochilus fissicornis* (Blenniidae)

by

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ABSTRACT. - The early developmental stages of *Hypleurochilus fissicornis* (Quoy & Gaimard, 1824) from egg to 120 hours after hatching are described for the first time, from three nests found in the rocky intertidal of Mar de Cobo, Argentina. Eggs are spherical, with an adhesive pad and purple pigment. Larvae have yellowish pigment on the head (snout, preocular, postocular) and pectoral fins. Melanophores cover the peritoneum and 28 occur in a row on the ventral edge of the tail.

RÉSUMÉ. - Développement des œufs et des premiers stades de vie de la blennie *Hypleurochilus fissicornis* (Blenniidae).

Les stades de développement d'*Hypleurochilus fissicornis* (Quoy & Gaimard, 1824) sont décrits jusqu'à 120 heures après l'éclosion, à partir de trois lots de frai trouvés dans la zone intertidale rocheuse de Mar de Cobo, Argentine. Les œufs sont sphériques, avec une bande adhésive et des pigments violets. Les larves ont des pigments jaunâtres sur la tête (museau, pré-oculaire, post-oculaire) et les nageoires pectorales. Le péritoine est pigmenté et une rangée de 28 mélanophores sur le bord ventral de la queue.

Key words. - Blenniidae - *Hypleurochilus fissicornis* - Spawn - Larval development - Intertidal.

The family Blenniidae, among the most diverse of marine fishes, is an important element of temperate and tropical reef fish communities (Nelson, 2006). Blenniids are small, sexually dimorphic, territorial teleost fish. They show high site fidelity and most species are widely distributed, abundant and easily collected (Stephens *et al*., 1970).

The ecology and biology of many blennies have been well studied (Patzner *et al*., 2009). but the early ontogenetic development of *Hypleurochilus fissicornis*, the single species occurring in intertidal waters of Argentina, is poorly known with very few descriptions of eggs and larvae (Cervigón and Bastida, 1974). This species is relatively common in intertidal rocky areas of Buenos Aires province (Cousseau *et al*., 2004), where spawning takes place during summer months. In general, one egg-mass can be observed per nest cavity, attached to the substrate or deposited on bivalves. One male provides parental care to each egg-mass and larvae are planktonic (Irigoyen and Delpiani, 2010). The purpose of this note is to describe the early life stages of *Hypleurochilus fissicornis* and its growth variation.

The egg-masses of *H. fissicornis*, each with its attendant male, were collected by snorkelling during extraordinarily low tides in the Mar de Cobo rocky intertidal (37°46'13"S, 57°26'28"W) in January and February 2009. The egg-masses and their corresponding males were maintained in the laboratory at a constant temperature with abundant aeration and daily 10% water changes. A sample of eggs (5-10 per sample) was removed daily by aspiration with a long pipette. After hatching, five larvae were sampled each day through 120 hours post-hatching, anaesthetised with clove oil, and then fixed in 3.3% phosphate-buffered formalin. Larvae were fed with lyophilized zooplankton following yolk absorption. Meristics and body measurements were taken for each larva using a calibrated stereoscopic microscope. Changes in embryonic and larval stages were registered with photomicrography. Terminology follows morphological criteria of Fuiman and Werner (2002).

Egg-masses were attached in a monolayer on the roof of each nest cavity. Attachment is via an adhesive pad larger than the egg diameter. Eggs are spherical (Fig. 1A), the average egg diameter (N = 21) was 0.71mm (range: 0.66-0.75 mm), a smooth chorion, a narrow perivitelline space, segmented yolk, and numerous purple pigments that give the egg mass a general purple colour, not according to the description by Cervigón and Bastida (1974). The number average oil droplets was 7 (0.04-0.06 mm diameter) in each egg. Pigmented eyes are observed in late stage embryos.

Immediately after birth, larvae exhibited discontinuous and non-oriented jerky movements, with a general trend to swim in a diagonal position with the head oriented surface-

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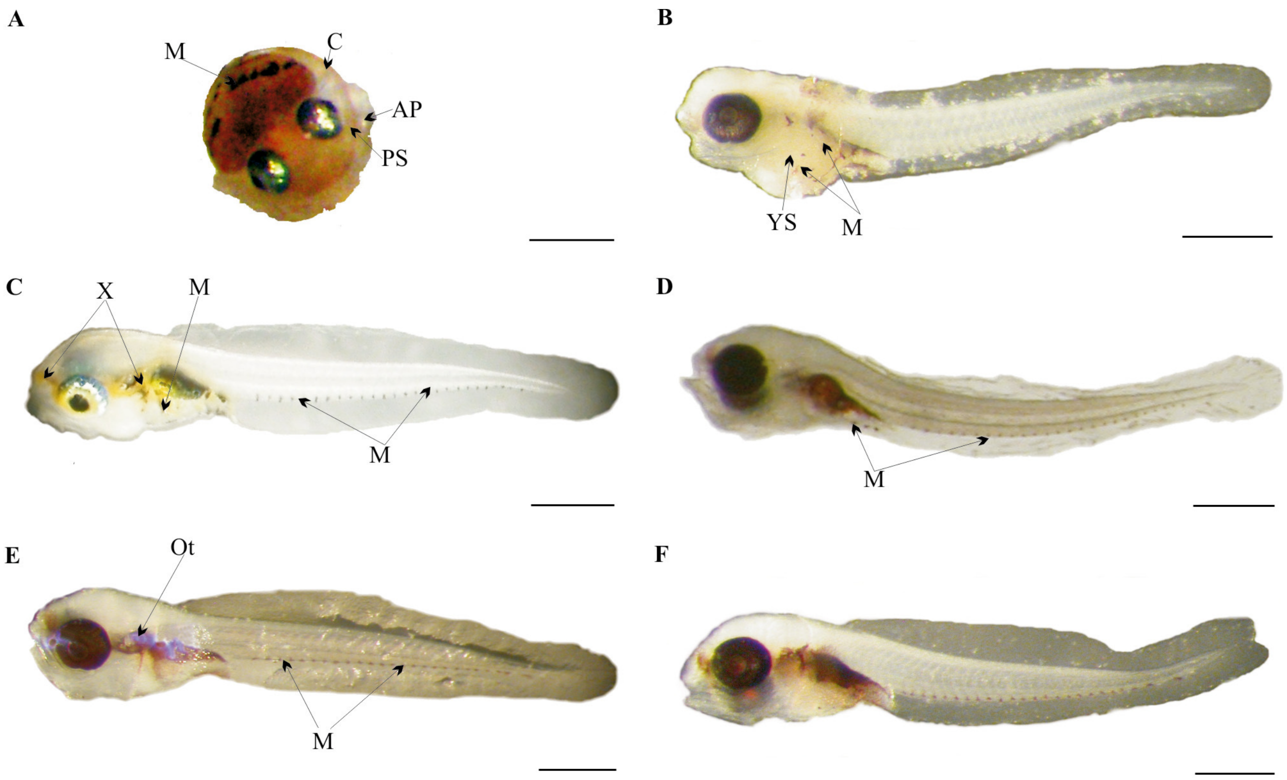

Figure 1. - Development stages of *Hypleurochilus fissicornis*. Egg (**A**) and larvae at 0 (**B**), 24 (**C**), 48 (**D**), 96 (**E**) and 120 (**F**) hours after hatching (mm). AP: adhesive pad; C: chorion; M: melanophores; Ot: otolith; PS: perivitelline space; X: xanthophore; YS: yolk sac. Scale bar: 0.5 mm.

ward and the yolk sac upward. Average total length of newly hatched larvae (Tab. I; Fig. 1B) was 2.43 mm. Eyes were fully pigmented, and a mouth outline was observed. The yolk sac pigmentation pattern, similar to that of *Hypsoblennius hentz* (Lippson and Moran, 1974), was composed of stellate melanophores. A single yellow xanthophore at the snout and two melanophores over the otic capsule could be observed. Both xanthophores and melanophores on the head at hatching have been documented in blennies, melanophores more commonly than xanthophores (Peters, 1981; Sabates, 1994; Kawaguchi *et al*., 1999).

Twenty-four hours after hatching (Fig. 1C), larvae averaged 2.57 mm total length, and the mouth was better developed. The peritoneum was pigmented and a row to 26-29 (modal number 28) melanophores extended on the ventral edge from the anus nearly to the end of the body. Two yellowish chromatophores could be observed in postorbital and antorbital positions, respectively. Pectoral fins were also yellow pigmented.

Larvae 48 hours old (Fig. 1D) averaged 2.83 mm total length and had a fully developed mouth. The yolk sac was greatly reduced and by 72 hours after hatching was entirely absorbed (Fig. 1E). Larvae resumed growth 96 hours after hatching (Fig. 1F).

Table I. - Average morphometrics of *Hypleurochilus fissicornis* after hatching (in mm). BDA: body depth at anus; BDP: body depth at pectoral fin base; CPD: caudal peduncle depth; ED: eye diameter; HL: head length; M: Number of Myomeres; NL: notochord length; SAL: snout to anus length; SnL: snout length. Standard deviation in brackets.

	0	24	48	72	96	120
NL	2.43 (0.10)	2.57 (0.22)	2.83 (0.30)	2.45 (0.35)	2.58 (0.24)	3.02 (0)
SAL	0.88 (0.14)	1.06 (0.06)	0.86 (0.09)	0.88 (0.09)	0.92 (0.11)	0.99 (0)
HL	0.48 (0.01)	0.53 (0.04)	0.58 (0.10)	0.51 (0.03)	0.53 (0.03)	0.63 (0)
SnL	0.08 (0.02)	0.11 (0.05)	0.12 (0.03)	0.11 (0.02)	0.13 (0.03)	0.12 (0)
ED	0.23 (0.20)	0.23 (0.10)	0.25 (0.05)	0.23 (0.02)	0.25 (0.02)	0.33 (0)
BDP	0.51 (0.04)	0.51 (0.05)	0.52 (0.02)	0.51 (0.05)	0.46 (0.06)	0.51 (0)
CPD	0.34 (0.03)	0.36 (0.03)	0.35 (0.06)	0.40 (0.10)	0.32 (0.05)	0.42 (0)
BDA	0.19 (0.02)	0.21 (0.03)	0.26 (0.02)	0.21 (0)	0.17 (0.06)	0.27 (0)
M(N°)	10 + 27	10 + 27	10 + 27	10 + 25	10 + 26	9 + 27

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